

CLAIMS:

1. A method for overlaying overlay image data received from an overlay image source over main image data received from a main image source, comprising:

storing the overlay image data in a memory;

fetching the overlay image data from the memory;

up-scaling the fetched overlay image data; and

combining the fetched, up-scaled overlay image data with the main image data to form composite image data.

2. The method of claim 1, further comprising down-scaling the overlay image data prior to said step of storing.

3. The method of claim 1, where the up-scaled overlay image data and the main image data define corresponding overlay image pixels and main image pixels respectively, wherein said overlay image pixels are either transparent or opaque, and wherein said step of combining includes (a) selecting said overlay image pixels and not the corresponding said main image pixels where said overlay image pixels are opaque,

and (b) selecting said main image pixels and not the corresponding said overlay image pixels where said overlay image pixels are transparent.

4. The method of claim 1, further comprising resizing the main image data prior to said step of combining.

5. The method of claim 1, further comprising converting the main image data from one color format to another color format prior to said step of combining.

6. The method of claim 5, further comprising resizing the main image data prior to said step of combining.

7. The method of claim 6, further comprising transmitting said composite image data to a display device.

8. The method of claim 7, further comprising storing the transmitted said composite image data in a memory in said display device.

9. The method of claim 1, further comprising transmitting said composite image data to a display device.

10. The method of claim 9, further comprising storing the transmitted said composite image data in a memory in said display device.

11. A method for overlaying overlay image data received from an overlay image source over main image data received from a main image source, comprising:

storing the overlay image data in a memory;

fetching the overlay image data from the memory;

streaming the main image data from the main image source; and

combining the fetched overlay image data with the streamed main image data to form composite image data.

12. The method of claim 11, further comprising up-scaling the fetched overlay image data prior to said step of combining.

13. The method of claim 12, further comprising down-scaling the overlay image data prior to said step of storing.

14. The method of claim 11, where the up-scaled overlay image data and the main image data define corresponding overlay image pixels and main image pixels respectively, wherein said overlay image pixels are either transparent or opaque, and wherein said step of combining includes (a) selecting said overlay image pixels and not

the corresponding said main image pixels where said overlay image pixels are opaque, and (b) selecting said main image pixels and not the corresponding said overlay image pixels where said overlay image pixels are transparent.

15. The method of claim 11, further comprising resizing the main image data prior to said step of combining.

16. The method of claim 11, further comprising converting the main image data from one color format to another color format prior to said step of combining.

17. The method of claim 16, further comprising resizing the main image data prior to said step of combining.

18. The method of claim 17, further comprising transmitting said composite image data to a display device.

19. The method of claim 18, further comprising storing the transmitted said composite image data in a memory in said display device.

20. The method of claim 11, further comprising transmitting said composite image data to a display device.

21. The method of claim 20, further comprising storing the transmitted said composite image data in a memory in said display device.

22. A graphics controller for overlaying overlay image data received from an overlay image source over main image data received from a main image source, comprising:

a memory for storing the overlay image data;

a fetching module for fetching the overlay image data from said memory;

a scaling circuit for up-scaling the fetched overlay image data; and

a combining circuit for combining the fetched, up-scaled overlay image data with the main image data to form composite image data.

23. The graphics controller of claim 22, where the up-scaled overlay image data and the main image data define corresponding overlay image pixels and main image pixels respectively, wherein said overlay image pixels are either transparent or opaque, and wherein said combining circuit is adapted for (a) selecting said overlay image pixels and not the corresponding said main image pixels where said overlay image pixels are

opaque, and (b) selecting said main image pixels and not the corresponding said overlay image pixels where said overlay image pixels are transparent.

24. The graphics controller of claim 22, further comprising a resizer for resizing the main image data provided to said combining circuit.

25. The graphics controller of claim 22, further comprising a color format converter for converting the main image data provided to said combining circuit from one color format to another color format prior to said step of combining.

26. The graphics controller of claim 25, further comprising a resizer for resizing the main image data provided to said combining circuit.

27. The graphics controller of claim 26, further comprising a display interface for transmitting said composite image data to a display device.

28. The graphics controller of claim 22, further comprising a display interface for transmitting said composite image data to a display device.

29. The graphics controller of claim 28, where the up-scaled overlay image data and the main image data define corresponding overlay image pixels and main image pixels respectively, wherein said overlay image pixels are either transparent or opaque, and wherein said combining circuit is adapted for (a) selecting said overlay image pixels

and not the corresponding said main image pixels where said overlay image pixels are opaque, and (b) selecting said main image pixels and not the corresponding said overlay image pixels where said overlay image pixels are transparent.

30. The graphics controller of claim 29, further comprising a resizer for resizing the main image data provided to said combining circuit.

31. The graphics controller of claim 29, further comprising a color format converter for converting the main image data provided to said combining circuit from one color format to another color format prior to said step of combining.

32. The graphics controller of claim 31, further comprising a resizer for resizing the main image data provided to said combining circuit.

33. A graphics controller for overlaying overlay image data received from an overlay image source over main image data received from a main image source, comprising:

an interface for receiving the main image data;

a memory for storing the overlay image data;

a fetching module for fetching the overlay image data from said memory; and

a transmitting pipe for streaming the main image data from said interface to a combining circuit for combining the fetched, up-scaled overlay image data with the streamed main image data to form composite image data.

34. The graphics controller of claim 33, further comprising a scaling circuit for up-scaling the fetched overlay image data provided to said combining circuit.

35. The graphics controller of claim 34, where the up-scaled overlay image data and the main image data define corresponding overlay image pixels and main image pixels respectively, wherein said overlay image pixels are either transparent or opaque, and wherein said combining circuit is adapted for (a) selecting said overlay image pixels and not the corresponding said main image pixels where said overlay image pixels are opaque, and (b) selecting said main image pixels and not the corresponding said overlay image pixels where said overlay image pixels are transparent.

36. The graphics controller of claim 33, further comprising a resizer for resizing the main image data provided to said combining circuit.



37. The graphics controller of claim 33, further comprising a color format converter for converting the main image data provided to said combining circuit from one color format to another color format prior to said step of combining.

38. The graphics controller of claim 37, further comprising a resizer for resizing the main image data provided to said combining circuit.

39. The graphics controller of claim 38, further comprising a display interface for transmitting said composite image data to a display device.

40. The graphics controller of claim 33, further comprising a display interface for transmitting said composite image data to a display device.

41. The graphics controller of claim 40, where the up-scaled overlay image data and the main image data define corresponding overlay image pixels and main image pixels respectively, wherein said overlay image pixels are either transparent or opaque, and wherein said combining circuit is adapted for (a) selecting said overlay image pixels and not the corresponding said main image pixels where said overlay image pixels are opaque, and (b) selecting said main image pixels and not the corresponding said overlay image pixels where said overlay image pixels are transparent.

42. The graphics controller of claim 41, further comprising a resizer for resizing the main image data provided to said combining circuit.

43. The graphics controller of claim 41, further comprising a color format converter for converting the main image data provided to said combining circuit from one color format to another color format prior to said step of combining.

44. The graphics controller of claim 43, further comprising a resizer for resizing the main image data provided to said combining circuit.

45. A system for overlaying overlay image data received from an overlay image source over main image data received from a main image source, comprising:

a source of the main image data;

a source of the overlay image data;

a display device; and

a graphics controller comprising a memory for storing the overlay image data, a fetching module for fetching the overlay image data from said memory, a scaling circuit for up-scaling the fetched overlay image data, and a combining circuit for combining the fetched, up-scaled overlay image data with the main image data to form composite image data.

46. The system of claim 45, where the up-scaled overlay image data and the main image data define corresponding overlay image pixels and main image pixels respectively, wherein said overlay image pixels are either transparent or opaque, and wherein said combining circuit is adapted for (a) selecting said overlay image pixels and not the corresponding said main image pixels where said overlay image pixels are opaque, and (b) selecting said main image pixels and not the corresponding said overlay image pixels where said overlay image pixels are transparent.

47. The system of claim 45, wherein said graphics controller includes a resizer for resizing the main image data provided to said combining circuit.

48. The system of claim 45, wherein said graphics controller includes a color format converter for converting the main image data provided to said combining circuit from one color format to another color format prior to said step of combining.

49. The system of claim 48, wherein said graphics controller includes a resizer for resizing the main image data provided to said combining circuit.

50. The system of claim 49, wherein said graphics controller includes a display interface for transmitting said composite image data to a display device.

51. The system of claim 50, wherein said display device includes a memory for storing said composite image data.

52. The system of claim 45, wherein said graphics controller includes a display interface for transmitting said composite image data to a display device.

53. The system of claim 52, wherein said display device includes a memory for storing said composite image data.

54. The system of claim 53, where the up-scaled overlay image data and the main image data define corresponding overlay image pixels and main image pixels respectively, wherein said overlay image pixels are either transparent or opaque, and wherein said combining circuit is adapted for (a) selecting said overlay image pixels and not the corresponding said main image pixels where said overlay image pixels are opaque, and (b) selecting said main image pixels and not the corresponding said overlay image pixels where said overlay image pixels are transparent.

55. The system of claim 54, wherein said graphics controller includes a resizer for resizing the main image data provided to said combining circuit.

56. The system of claim 54, wherein said graphics controller includes a color format converter for converting the main image data provided to said combining circuit from one color format to another color format prior to said step of combining.

57. The system of claim 56, wherein said graphics controller includes a resizer for resizing the main image data provided to said combining circuit.

58. The system of claim 54, wherein said source of main image data includes a camera.

59. The system of claim 54, wherein said source of main image data includes a host CPU.

60. The system of claim 59, wherein said host CPU is adapted to down-scale the overlay image data provided to said memory.

61. A system for overlaying overlay image data received from an overlay image source over main image data received from a main image source, comprising:

a source of the main image data;

a source of the overlay image data;

a display device; and

a graphics controller comprising an interface for receiving the main image data, a memory for storing the overlay image data, a fetching module for

fetching the overlay image data from said memory, and a transmitting pipe for streaming the main image data from said interface to a combining circuit for combining the fetched, up-scaled overlay image data with the streamed main image data to form composite image data.

62. The system of claim 61, wherein said graphics controller includes a scaling circuit for up-scaling the fetched overlay image data provided to said combining circuit.

63. The system of claim 62, where the up-scaled overlay image data and the main image data define corresponding overlay image pixels and main image pixels respectively, wherein said overlay image pixels are either transparent or opaque, and wherein said combining circuit is adapted for (a) selecting said overlay image pixels and not the corresponding said main image pixels where said overlay image pixels are opaque, and (b) selecting said main image pixels and not the corresponding said overlay image pixels where said overlay image pixels are transparent.

64. The system of claim 61, wherein said transmitting pipe includes a resizer for resizing the main image data provided to said combining circuit.

65. The system of claim 61, wherein said transmitting pipe includes a color format converter for converting the main image data provided to said combining circuit from one color format to another color format prior to said step of combining.

66. The system of claim 65, wherein said transmitting pipe includes a resizer for resizing the main image data provided to said combining circuit.

67. The system of claim 66, wherein said transmitting pipe includes a display interface for transmitting said composite image data to a display device.

68. The system of claim 67, wherein said display device includes a memory for storing said composite image data.

69. The system of claim 61, wherein said graphics controller includes a display interface for transmitting said composite image data to a display device.

70. The system of claim 69, wherein said display device includes a memory for storing said composite image data.

71. The system of claim 70, where the up-scaled overlay image data and the main image data define corresponding overlay image pixels and main image pixels respectively, wherein said overlay image pixels are either transparent or opaque, and wherein said combining circuit is adapted for (a) selecting said overlay image pixels and not the corresponding said main image pixels where said overlay image pixels are opaque, and (b) selecting said main image pixels and not the corresponding said overlay image pixels where said overlay image pixels are transparent.

72. The system of claim 71, wherein said graphics controller includes a resizer for resizing the main image data provided to said combining circuit.

73. The system of claim 71, wherein said graphics controller includes a color format converter for converting the main image data provided to said combining circuit from one color format to another color format prior to said step of combining.

74. The system of claim 73, wherein said graphics controller includes a resizer for resizing the main image data provided to said combining circuit.

75. The system of claim 71, wherein said source of main image data includes a camera.

76. The system of claim 71, wherein said source of main image data includes a host CPU.

77. The system of claim 76, wherein said host CPU is adapted to down-scale the overlay image data provided to said memory.